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J Drug Target. 2003;11(8-10):539-45. Review.  
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Arch Immunol Ther Exp (Warsz). 2002;50(6):365-9. Polish.  
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**A corn-based delivery system for animal vaccines: an oral transmissible gastroenteritis virus vaccine boosts lactogenic immunity in swine.**

Vaccine. 2004 Jun 23;22(19):2420-4.  
PMID: 15193404 [PubMed - indexed for MEDLINE]

☐ 4: [Streatfield SJ, Jilka JM, Hood EE, Turner DD, Bailey MR, Mayor JM, Woodard SL, Beifuss KK, Horn ME, Delaney DE, Tizard IR, Howard JA](#) Related Articles, Links



**Plant-based vaccines: unique advantages.**

Vaccine. 2001 Mar 21;19(17-19):2742-8.  
PMID: 11257418 [PubMed - indexed for MEDLINE]

☐ 5: [Lamphear BJ, Streatfield SJ, Jilka JM, Brooks CA, Barker DK, Turner DD, Delaney DE, Garcia M, Wiggins B, Woodard SL, Hood EE, Tizard IR, Lawhorn B, Howard JA](#) Related Articles, Links



**Delivery of subunit vaccines in maize seed.**

J Control Release. 2002 Dec 13;85(1-3):169-80.  
PMID: 12480322 [PubMed - indexed for MEDLINE]



















☐ 6: [Streatfield SJ, Lane JR, Brooks CA, Barker DK, Poage ML, Mayor JM, Lamphear BJ, Drees CF, Jilka JM, Hood EE, Howard JA](#) Related Articles, Links






**Corn as a production system for human and animal vaccines.**

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-  **Plant-based vaccines.**  
Int J Parasitol. 2003 May;33(5-6):479-93. Review.  
PMID: 12782049 [PubMed - indexed for MEDLINE]
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PMID: 12114111 [PubMed - indexed for MEDLINE]
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Biotechnol Prog. 2002 May-Jun;18(3):538-50. Erratum in: Biotechnol Prog. 2002 Jul-Aug;18(4):912.  
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Expert Rev Vaccines. 2003 Dec;2(6):763-75. Review.  
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Curr Opin Mol Ther. 2000 Feb;2(1):80-6. Review.  
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AIDS. 2004 Apr 30;18(7):991-1001.  
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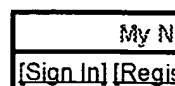
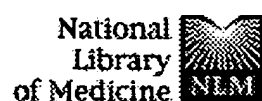
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J Plant Physiol. 2003 Jul;160(7):755-64. Review.  
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**Oral immunogenicity of human papillomavirus-like particles expressed in potato.**  
J Virol. 2003 Aug;77(16):8702-11.  
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**Optimization of a multi-gene HIV-1 recombinant subtype CRF02\_AG DNA vaccine for expression of multiple immunogenic forms.**  
Virology. 2004 Feb 5;319(1):118-30.  
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Trends Biotechnol. 1995 Sep;13(9):388-92. Review.  
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Phytochemistry. 2004 Apr;65(8):989-94. Review.  
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## Advantageous features of plant-based systems for the development of HIV vaccines.

Horn ME, Pappu KM, Bailey MR, Clough RC, Barker M, Jilka JM, Howard JA, Streatfield SJ.

ProdiGene, College Station, TX 77845, USA.

Plants have recently become an attractive option for the production of recombinant proteins. Plant-based systems can be used to produce many classes of foreign proteins including candidate vaccine antigens. The selected antigen can be purified from plant material prior to delivery by the preferred route, or alternatively delivered orally in edible plant material that has been processed to give a homogeneous and stable product. Several plant species have been used to express a wide range of vaccine candidates with tobacco, potato and corn being particularly favored. Corn seed is especially well suited to various food processing technologies that generate dry homogeneous material suitable for extended storage and refrigeration-free transport and distribution. Many antigens have been expressed in corn and assessed for efficacy in trials with generally positive results. Candidate HIV vaccines are particularly good targets for plant-based oral delivery since there is a great need for an easily distributed affordable vaccine that could be administered without injection and induce strong mucosal immune responses. As a first step in evaluating plant expression technology with a relevant antigen that might easily be tested in an animal system, we expressed the SIV major surface glycoprotein gp130 (analogous to HIV gp120) in corn seed. Expression levels were achieved that are compatible with conducting oral delivery trials in animals.

Publication Types:

- Review
- Review, Tutorial

PMID: 15203923 [PubMed - indexed for MEDLINE]

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Aug 26, 2004

DERWENT-ACC-NO: 1994-302685

DERWENT-WEEK: 200457

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TITLE: New mammalian viral immunogen, vectors, transgenic plants and food - are used as anti-viral vaccines, esp. by eating transgenic plants, e.g. tomatoes

INVENTOR: ARNTZEN, C J; LAM, D M ; MASON, H S ; LAM, D

PRIORITY-DATA: 1993US-0026393 (March 4, 1993), 1991US-0750049 (August 26, 1991), 1996US-0481291 (August 23, 1996), 1993US-0156508 (November 23, 1993), 1995US-0479742 (June 7, 1995), 1998US-0111330 (July 7, 1998), 2000US-0593908 (June 14, 2000), 2001US-0816846 (March 23, 2001), 1995US-0481552 (June 7, 1995), 2000US-0676734 (September 29, 2000), 2001US-0925990 (August 9, 2001), 2001US-0918937 (July 31, 2001), 2003US-0733135 (December 11, 2003)

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<input type="checkbox"/> <a href="#">EP 728014 A4</a>	January 1, 1997		000	A61K039/00
<input type="checkbox"/> <a href="#">US 6034298 A</a>	March 7, 2000		000	A01H001/04
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ABSTRACTED-PUB-NO: US 5612487A

BASIC-ABSTRACT:

An immunogen (I) derived from a mammalian virus is new and consists of a protein which is antigenic in its native state and is expressed in a plant.

Also claimed are: (i) a transgenic plant expressing (I); (ii) a food contg. at least a portion of (I); and (iii) a plasmid vector or DNA fragment for transforming a plant and comprising DNA encoding (I) operably linked to a plant-functional promoter.

USE - (I) may be used as an anti-viral vaccine and is administered by standard vaccine introduction or by consumption of the edible portion of the transgenic plants, pref. in fruit or vegetable juice. The plant may be a tomato, tobacco or potato plant.

ABSTRACTED-PUB-NO:

US 6034298A

EQUIVALENT-ABSTRACTS:

A transgenic tobacco plant comprising a DNA sequence encoding a recombinant hepatitis B viral surface antigen protein, wherein said plant is capable of synthesizing a recombinant hepatitis B viral surface antigen protein which assembles into antigenic particles.

An immunogen (I) derived from a mammalian virus is new and consists of a protein which is antigenic in its native state and is expressed in a plant.

Also claimed are: (i) a transgenic plant expressing (I); (ii) a food contg. at least a portion of (I); and (iii) a plasmid vector or DNA fragment for transforming a plant and comprising DNA encoding (I) operably linked to a plant-functional promoter.

USE - (I) may be used as an anti-viral vaccine and is administered by standard vaccine introduction or by consumption of the edible portion of the transgenic plants, pref. in fruit or vegetable juice. The plant may be a tomato, tobacco or potato plant.

US20010053367A

An immunogen (I) derived from a mammalian virus is new and consists of a protein which is antigenic in its native state and is expressed in a plant.

Also claimed are: (i) a transgenic plant expressing (I); (ii) a food contg. at least a portion of (I); and (iii) a plasmid vector or DNA fragment for transforming a plant and comprising DNA encoding (I) operably linked to a plant-functional promoter.

USE - (I) may be used as an anti-viral vaccine and is administered by standard vaccine introduction or by consumption of the edible portion of the transgenic plants, pref. in fruit or vegetable juice. The plant may be a tomato, tobacco or potato plant.

US20020006411A

An immunogen (I) derived from a mammalian virus is new and consists of a protein which is antigenic in its native state and is expressed in a plant.

Also claimed are: (i) a transgenic plant expressing (I); (ii) a food contg. at least a portion of (I); and (iii) a plasmid vector or DNA fragment for transforming a plant and comprising DNA encoding (I) operably linked to a plant-functional promoter.

USE - (I) may be used as an anti-viral vaccine and is administered by standard vaccine introduction or by consumption of the edible portion of the transgenic plants, pref. in fruit or vegetable juice. The plant may be a tomato, tobacco or potato plant.

WO 9420135A

ABSTRACTED-PUB-NO: US 5612487A

EQUIVALENT-ABSTRACTS: A transgenic tobacco plant comprising a DNA sequence encoding a recombinant hepatitis B viral surface antigen protein, wherein said plant is capable of synthesizing a recombinant hepatitis B viral surface antigen protein which assembles into antigenic particles. US 6034298A An immunogen (I) derived from a mammalian virus is new and consists of a protein which is antigenic in its native state and is expressed in a plant. Also claimed are: (i) a transgenic plant expressing (I); (ii) a food contg. at least a portion of (I); and (iii) a plasmid vector or DNA fragment for transforming a plant and comprising DNA encoding (I) operably linked to a plant-functional promoter. USE - (I) may be used as an anti-viral vaccine and is administered by standard vaccine introduction or by consumption of the edible portion of the transgenic plants, pref. in fruit or vegetable juice. The plant may be a tomato, tobacco or potato plant. US20010053367A An immunogen (I) derived from a mammalian virus is new and consists of a protein which is antigenic in its native state and is expressed in a plant. Also claimed are: (i) a transgenic plant expressing (I); (ii) a food contg. at least a portion of (I); and (iii) a plasmid vector or DNA fragment for transforming a plant and comprising DNA encoding (I) operably linked to a plant-functional promoter. USE - (I) may be used as an anti-viral vaccine and is administered by standard vaccine introduction or by consumption of the edible portion of the transgenic plants, pref. in fruit or vegetable juice. The plant may be a tomato, tobacco or potato plant. US20020006411A An immunogen (I) derived from a mammalian virus is new and consists of a protein which is antigenic in its native state and is expressed in a plant. Also claimed are: (i) a transgenic plant expressing (I); (ii) a food contg. at least a portion of (I); and (iii) a plasmid vector or DNA fragment for transforming a plant and comprising DNA encoding (I) operably linked to a plant-functional promoter. USE - (I) may be used as an anti-viral vaccine and is administered by standard vaccine introduction or by consumption of the edible portion of the transgenic plants, pref. in fruit or vegetable juice. The plant may be a tomato, tobacco or potato plant. WO 9420135A

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